

## INVITED COMMENTARY

## It Is Not Yet Time to Bury Femoropopliteal Bypass Surgery

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What is the best method for revascularising the superficial femoral artery (SFA)? Nobody really knows, although many of us claim otherwise. We can avail ourselves of open bypass or endovascular revascularisation. The open surgical options include bypass with autologous vein or prosthesis, while the endovascular toolkit includes angioplasty with a conventional or drug eluting balloon (DEB), atherectomy with or without a DEB, or stenting with plenty of options to choose from: a drug eluting stent, covered stent, spiral stent, or spot stenting. I would also wager that a lot of energy in R&D departments is being put towards new innovations for more durable options. Randomised controlled trials (RCTs) comparing endovascular with open surgery, or endovascular devices with each other, are scarce, and any new RCT reports are sure to receive a warm welcome. In the current issue of this journal, we can read a paper by Meecham and colleagues,<sup>1</sup> who have analysed the femoropopliteal revascularisations in the BASIL trial with almost five years follow up. In the trial, 128 patients underwent primary bypass, while 183 patients underwent primary endovascular revascularisation for atherosclerotic femoropopliteal disease that was causing chronic limb threatening ischaemia without infrapopliteal revascularisation. The authors found that while the 30 day mortality after bypass and endovascular treatment was the same for both treatment modalities, the morbidity, with the wound infection rate in particular, was higher among bypass patients, whereas the endovascularly treated (EVT) patients required more surgical interventions during the first 30 days. In the long run (mean follow up 46 and 44 months after bypass and EVT, respectively), the amputation free survival, limb salvage rate, and wound healing rate were the same in the two groups. However, re-interventions were needed more often after EVT: 34% of the patients required a re-intervention, compared with 25% after bypass surgery. One in four EVT patients (47/183) eventually underwent bypass.

The battle between open bypass and endovascular revascularisation in infrainguinal PAOD has been ongoing for as long as I have been a vascular surgeon. Over the years, I have seen aggressive presentations by endovascular enthusiasts who have gone so far as to show images of the funerals of open surgery patients, complete with weeping widows dressed in black. At the same time, opinions for the superiority of bypass surgery remain strong among many vascular surgeons. Of all the anatomical regions, the femoropopliteal is where the question regarding the best revascularisation technique is the most justified: both treatment methods are available, and primary technical success is easy to achieve with

either one, which means that the matter of superiority is ultimately resolved by long-term durability.

In our hospital, we perform almost 1000 procedures to revascularise SFAs each year. According to the population projections, the number of elderly patients will keep increasing for another 30 years before the curve turns downwards. As the study by Meecham and colleagues<sup>1</sup> shows, this is not just a matter of the immediate workload caused by the primary procedure, but the treatment strategy will also have a significant impact on future workload. According to the incidences reported in this paper, if we treated all our patients by endovascular means annually, we would be performing 400 redo operations on the same patients during the next five years; in comparison, the re-operation rate for open surgical bypass would be 190.

The oldest functioning femoropopliteal bypass I have come across during my career as a vascular surgeon was performed in 1966. The lady had also undergone aortobifemoral reconstruction with a Dacron graft for Leriche syndrome, and now there was a pseudoaneurysm in the groin anastomosis of the Dacron graft. This pseudoaneurysm was repaired, and the proximal anastomosis of the 40 year old vein bypass was transposed. During its 40 year existence, the vein had become an artery, the wall was thick, and the endothelium had calcified plaques, but the bypass was alive and kicking and went on to fulfil its purpose after the groin reconstruction. Although the threshold to perform bypass surgery has become higher (maybe even too high) because the endovascular procedure is more achievable and requires fewer immediate resources, such as hospital beds, operating room capacity, and workload, open surgery remains a means to achieve an extremely durable revascularisation.

In the BASIL substudy by Meecham et al., the fascinating question regarding the best revascularisation method for the treatment of occlusive SFA lesions remains unanswered, but the paper does yield valuable information on the long-term outcome and additional resources needed to maintain the revascularisation. I am not ready to dress in black and bury open femoropopliteal region bypasses quite yet in patients who have decent a great saphenous vein and over two years of life expectancy. On the contrary, I expect to see a new increase in this excellent procedure in these patients, as we will be under increasing pressure to achieve durable and more cost effective solutions in the future. However, I certainly hope that some of the R&D departments are able to surprise me positively with an excellent durable endovascular solution!

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## REFERENCE

- 1 Meecham L, Bate G, Patel S, Bradbury AW. A comparison of clinical outcomes following femoro-popliteal bypass or plain balloon angioplasty with selective bare metal stenting in the Bypass versus Angioplasty in Severe Ischaemia of the Limb (BASIL) trial. *Eur J Vasc Endovasc Surg* 2019 [in this issue].